

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claim 1 and ADD new claims 12 and 13 in accordance with the following:

1. (CURRENTLY AMENDED) A characteristic amount calculating device for soldering inspection, comprising:

design information inputting means for inputting design information of an inspection object;

inspection standard inputting means for inputting an inspection standard specifying a defective range on solder amount or solder wetting amount;

solder shape calculating means for calculating shape information of a plurality of virtual solder fillet according to fillets based on said design information;

inspection image calculating means for calculating an inspection image according to said shape information of said ~~solder fillet~~ virtual solder fillets;

characteristic amount calculating means for calculating a ~~characteristic amount~~ amounts of virtual solder shapes from said inspection image ~~images~~;

solder shape defective/nondefective determining means for determining whether the virtual solder shape is ~~shapes are~~ defective or nondefective from said shape information of said virtual solder fillets by using said inspection standard; and

characteristic amount outputting means for ~~displaying or outputting said characteristic amount~~ amounts of said virtual solder shapes and a result of defective/nondefective determination to compare said characteristic amounts with said result of defective/nondefective determination to thereby determine a threshold value of said characteristic amount.

2. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said design information includes a component shape and a land shape, and said solder shape calculating means calculates a plurality of solder shape data according to said component shape and said land shape input.

3. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said design information includes a component mounting position, a solder wicking position, a solder spreading position, and a solder basic shape independent of design/manufacture conditions; and

said solder shape calculating means calculates a plurality of solder shape data according to said component mounting position, said solder wicking position, said solder spreading position, and said solder basic shape input.

4. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said solder shape calculating means calculates three-dimensional coordinate data by using a fillet curve showing the contour of said solder fillet, a wicking curve showing a solder wicking condition on a component surface, and a spreading curve showing a solder spreading condition on a land surface.

5. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said inspection image calculating means has inspection image obtaining means for obtaining said inspection image by using an inspection image obtaining function indicating the intensity of said inspection image with respect to the characteristic amount including the angle or thickness of said solder fillet.

6. (ORIGINAL) A characteristic amount calculating device according to claim 5, wherein said inspection image obtaining function is calculated by using an actual inspection image of a solder fillet formed on a land at an unmounted portion as a function showing the intensity of said inspection image with respect to the characteristic amount including the angle or thickness of said solder fillet.

7. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said inspection standard includes a solder amount standard, a solder wicking standard, and a solder spreading standard.

8. (ORIGINAL) A characteristic amount calculating device according to claim 7, wherein said solder shape defective/nondefective determining means performs the defective/nondefective determination for a virtual solder shape by using said inspection standard

specifying a defective range on a solder amount or a solder wetting amount.

9. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said solder shape defective/nondefective determining means classifies the defective solder shape into a plurality of ranks according to the degree of defective.

10. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said characteristic amount outputting means outputs information selected from the group consisting of a solder shape, solder amount, wetting amount, and inspection image shown by three-dimensional coordinate data, in addition to said characteristic amount and said defective/nondefective determination result.

11. (ORIGINAL) A characteristic amount calculating device according to claim 1, wherein said characteristic amount outputting means specifies a threshold related to said characteristic amount to thereby display a solder shape determined as undertight or overtight.

12. (NEW) A characteristic amount calculating method for soldering inspection, comprising:

- inputting design information of an inspection of object;
- inputting an inspection standard specifying a defective range on solder amount or solder wetting amount;
- calculating shape information of a virtual solder fillet based on said design information;
- calculating an inspection image according to said shape information of said virtual solder fillet;
- calculating a characteristic amount of virtual solder shape from said inspection image;
- determining whether the virtual solder shape is defective or nondefective from said shape information of said virtual solder fillet by using said inspection standard; and
- outputting the characteristic amount of said virtual solder shape and a result of defective/nondefective determination to compare said characteristic amount with said result of defective/nondefective determination to thereby determine a threshold value of said characteristic amount.

13. (NEW) A characteristic amount calculating method for soldering inspection, comprising:

generating inspection images for a plurality of virtual solder fillets based on input design information; and

calculating a threshold value for inspecting a soldered portion of a component by comparing calculated characteristic amounts of virtual solder shapes from the inspection images, and using the threshold value for said inspecting.